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TERMINALS IN SYSTEM ANALYSIS

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Abstract

This study aims to provide clarification on system analysis and the presentation of a system analysis report. The method used is meta-analytical. The conclusion is that the system analysis a) highlights the structure, factors, functions, processes and objectives / goals of the system, b) shows the extent to which the system achieves its objectives, c) whether there are computational tools that provide feedback and feedforvard , e) warns about the negative evolutions in the system and f) leads to the optimization of the presence of the system in variable contexts.

Keywords: system analysis, system, functions, factors, processes

1. What is system analysis

Any type of field / activity / profession / art can be seen as a set of interventions, methods and techniques of programming, organization, resource allocation, control and action that ensure the implementation and achievement of proposed / established objectives. One way to reduce this complex concept to essence is to analyze it operationally as a set of components (Fitzgerald, et al.,

1973). In a logical-temporal sequence the operational articulation of any system can be seen as

a) the initial state of a system;

b) representation of a future state;

c) the actions exercised on the system and its environment in order to determine an evolution that tends towards that projective representation.

Any state of a system (past, present, future, possible) is expressed through benchmarks that contain on the one hand the elements and on the other hand its fundamental laws. These terminals are identified and revealed by analysis.

A system is defined by its structure, functions, processes and internal factors. By definition, analysis is a scientific method of investigation / research that is based on the systematic and conceptual study of each element (Kothari & Nagrath, 1989; Palade, Bratucu & Demeter, 2013;Ciobanu, 2019). More precisely, it consists in identifying, differentiating, determining the composition of a system and categorizing its primary, constituent elements, by detecting the relationships between these elements and by radiographing the functions performed by them within the system.

Generally, operational analysis and system analysis are seen separately; operational analysis is mainly concerned with functions as operations, as influences; the system analysis would only deal with the identification of the elements that structure the system.

Of these two types of analysis, the latter is the subject of fundamental concerns, having a crucial importance especially in the subsystems with the role of evaluation, management-monitoring, whose purpose is to support the decision-making act (Gioroceanu, 2018; Balan, 2019; Saeed, 2019).

The system analysis can focus on general aspects, which involve extensive processes at the level of an organized entity, but also specific aspects channeled on processes whose management requires a specialized approach.

2. System analysis reports

Each system has an automated loop whose main task is to report on what the system has proposed and what it has achieved. In this sense, system analysis reports are prepared. It requires a lot of rigor and responsibility in the elaboration of the analysis reports, especially in the formulation of the conclusions that must be subsequently taken in the shit by the decision-making system operator (leader, manager, project director) (Oprea, 2021; Li, 2021; Johnsson et al. 2021; Jusoh et al. 2021; Ali Garcia et al.2021). A well-informed leader in system analysis is aware that documents drawn up along these lines often address negative issues, with positive ones possibly being proposed as role models. Identifying the negative aspects, the disturbing or inhibitory factors that act within and / or on the system is a key element in approaching the variants of action. System analysis reports are always an opportunity to identify the most suitable solutions for optimization. In this context, for example for managerial systems, although the analysis activity for the managerial area is generally received reluctantly or adversely by persons who are part of or have a direct relationship with the subsystems concerned, this should not be seen as a nuisance. the merits of those in the above-mentioned category, but as an efficient control system (similar to a control panel equipped with measuring instruments for various variables), available to the manager. A common view is that control tools can often be set aside by the manager who masters the "art of leadership", but when important decisions need to be made about systems whose complexity exceeds even the rapid computing power of to a refined intellect, we can be sure that any capable manager will seek a solid foundation of his decisions based on specialized analysis activities, carried out projectively-anticipatively, not punctually-corrective.

A system analysis aims at the precise knowledge of the components of a system both statically and dynamically, according to the following schematic representation:

- elements of the organizational architecture of the system - organizational entities, actors, actors;

- elements of ideation, conception, doctrinal elements (strategies, norms, policies, objectives, tasks, etc.):

– factual / procedural elements (acts, facts, processes, activities, actions, operations, procedures, methods, etc.);

– material elements (means, infrastructure, endowments, etc.).

In this representation, people, as parts of some entities of, using available evils, contribute by deeds to the fulfillment of the objectives that represent the pragmatic transposition of the system strategy and tactics.

From a decisional point of view, the system analysis is placed in the diagnosis-prognosis cycle. System analysis reports are useful to decision makers to organization leaders insofar as they provide:

- an overview of the state of the system, factors, components (elements) of the system and the actions / interactions / transactions between them (highlighting the effects of each action / interaction / transaction within the system), operational flows on each component: human , technical, technological, material, financial, decisional;

- an image of high accuracy, as realistic as possible, consistent, cohesive and coherent of the possible / probable evolution of the system. starting from the present data and from the factors whose associated probabilities require their inclusion in the forecast calculation;

- a set of variants of action in acceptable margins as probability, as emergency, as decisional support, in the conditions of knowing the evolution of the system on which the managerial act is exercised; to highlight that the managerial act is under the influence of internal / external factors, stimulators /

disruptors / inhibitors, anticipatory / unanticipated (surprise factors, hidden variables); these variants of action are under the constraints imposed by the strategy / policy / tactics of the system and under the imprint of the decisional act; they become either the foundations of planning or the basis for constructive / corrective / adaptive interventions within the system (Bejan, 2007; Țurcanu, 2020; Gavrilă, 2020; Zita, 2020).

Any system analysis starts from the state of fact (formal laws, mechanisms, rules of constancy) and in an inductive-probabilistic way (through empirical generalizations whose strength lies in the associated probabilistic values). The fundamental objective of the system analysis is the elaboration of an explanatory model with predictive valences. The quality of the elaborated explanatory model is in accordance, sometimes directly proportional, with the degree of knowledge of the relevant factors in the evolution that generated the analytical approach. The experience of the leaders confirmed the induction that the degree of knowledge of a system can be amplified only by a specialized, continuous, deep, ample activity. The real significance of the variation of some indicators is rarely detached immediately, most often being necessary. , raw material in complex analyzes supported by mathematical tools. To be valid for a computational process, system data is the product of ongoing monitoring. These data may constitute the critical mass likely to determine their statistical relevance. This requires time and experience, which makes any decision-making to start, to contribute to decision-making success, in-depth studies and ongoing scientific support, not from a presumed "art management ", translated in most situations by vocation or talent (Catan & Țurcanu, 2010; Dobrin, Deac & Dinulescu, 2017; Todorović, 2019).

Another aspect that must be taken into account is the decision-making level for which a certain system analysis is intended: operational, tactical, strategic. If the evaluation is performed at the operational level, there is a risk that the data subject to evaluation will not have relevant statistics (data volume, sample size,

case series, etc.). Under these conditions, relying on fragile cases can lead to erroneous decisions (Bengtsson et al., 2020; Grant et al., 2020; Frunză, 2021). Among the most common errors produced as an effect of performing some registration system analyzes: forced analogies, causal attribution error, hasty generalization, absolutization of quantitative values, qualitative-percentage evaluation without representation of quantitative benchmarks, neglect of adjacent factors, etc.

Some system analyzes are done on a specific theme, and others on a set of themes, factors or functions (Gawlik-Kobylińska, 2020; Thavabalan et al., 2020; Marques et al., 2021). In general, system analysis contributes to an effective decision-making act. They highlight dysfunctions, difficulties, how previous decisions have led to optimizing the functioning of the system. In this context, however, it is necessary to resume and emphasize that in the evaluations presented below were identified not only negative aspects but also developments suitable to be models of practice. However, from a managerial point of view, immediate significance from the perspective of maintaining the system at optimal parameters had, in particular, the aspects likely to disturb / prevent the development of specific processes, because the elimination of generating factors determines, in most cases, positive developments. Some of the highlighted dysfunctions were favored by mechanisms specific to the framework as a whole (for example, the practice of drawing up the data search plan, the relatively low relationship between the current state and the established procedures of the system, etc.), thus superior. The analysis activity itself, on each component, factor, function in part must highlight the structural aspects (mechanisms, rules, procedures, dynamics, etc.) specific to each element of the system (Motoi, 2020; Murea, 2020; Maris, 2020; George, 2020; Suherman, 2021).

Among the most relevant premises that reflect the initial state of the system are:

a) conducting an evaluation of the functioning of systemic circuits, systemic factors and functions;

b) examining the data about the relative lack of correlation between objectives, forms of materialization, average places, possibilities, these being highlighted generically, imprecisely; also, some projections regarding the valorization of data appear as almost standardized, without a correct estimation of the finality and efficiency of the systemic efforts to reach the objectives, the goals;

c) evaluating the effective way of adapting to the context;

d) ascertaining the speed of decision making;

e) the dynamics and the contribution of the human resource to the achievement of the objectives

f) the existence of the self-analytical possibility of standardized calculation;

g) the existence of negative tendencies to pursue the achievement of objectives;

h) operation of layer sensors, appearance / emergence of problems on the information flows of the system;

i) the existence of procedures for expertise of information from the internal flows of the system.

Starting from these premises / factual elements highlighted by activities supported by system analysis, we come to identify procedural elements with direct effects in streamlining the operation of the system, but also with favorable projections from the perspective of optimizing some of the processes and fundamentals of the system.

The system analysis report must lead to the formulation / implementation of tools or procedures to streamline system functions, improve system factors, processes and structure.

3. Conclusion

One of the most important benefits of system analysis is that it allows the development of maps and diagrams on the components and processes of achieving the objectives. On the other hand, starting from the awareness of some negative / positive evolutions registered on apparently disparate components of the specific activity leads to the elaboration of an integrated computational tool, which allows the substantiation of systemic decisions and the efficiency of the system presence in variable contexts.

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